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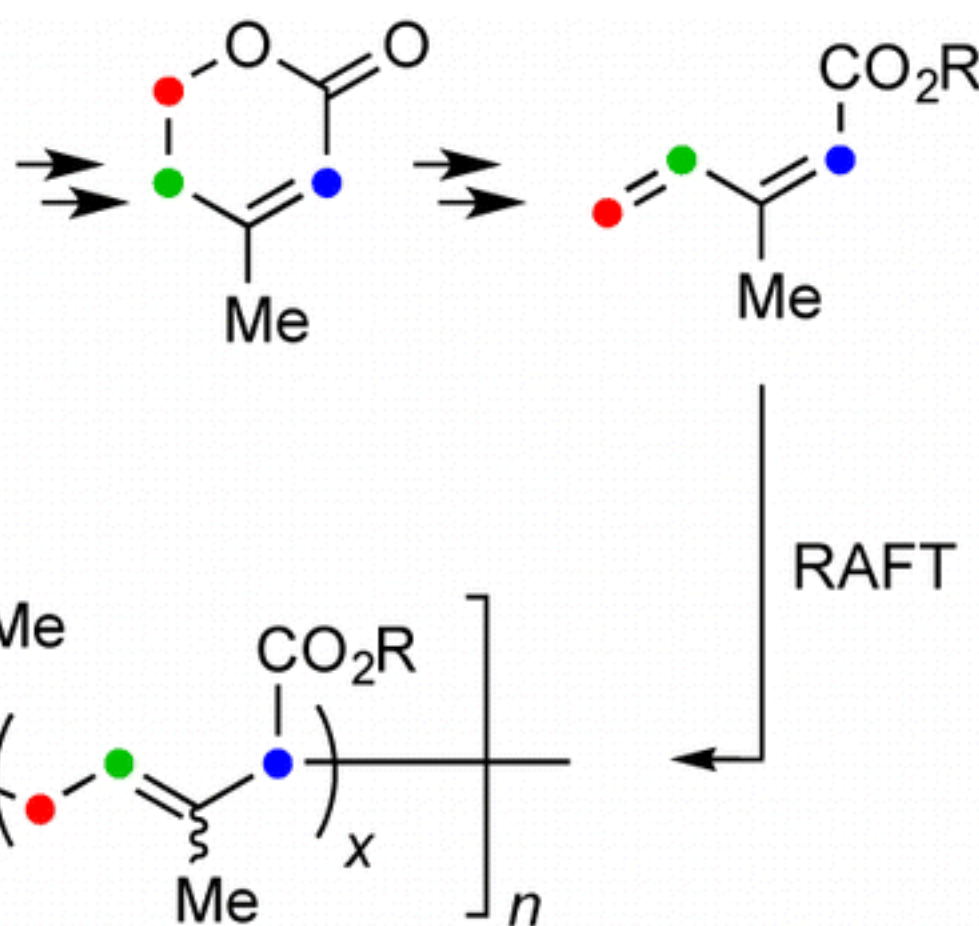
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Abstract



A short and efficient synthesis of a series of isoprenecarboxylic acid esters and their corresponding polymers is presented. The base-catalyzed eliminative ring opening of anhydromevalonolactone (**3**) provides isoprenecarboxylic acid (**6-H**), which was further transformed to the isoprenecarboxylic acid esters. Reversible addition–fragmentation chain-transfer (RAFT) polymerization was used to synthesize high molecular weight ($>100 \text{ kg mol}^{-1}$) poly(isoprenecarboxylates) with dispersities (D) of ca. 1.5. The glass transition temperatures (T_g) and entanglement molecular weights (M_e) of the poly(isoprenecarboxylates) were determined and showed similar trends to the T_g and M_e values for analogous poly(acrylate esters). These new glucose-derived materials could provide a sustainable alternative to poly(acrylates).



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